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Park Lands and their Boundaries.

IN a late number of the *New England Magazine*, Mr. Charles Eliot gives an outline sketch of the park system of Boston and its adjacent cities, with a map showing the reservations proposed and actually made for this metropolitan district. Within a radius of eleven miles from the State House there are thirty-seven distinct municipalities, containing a population of a million and property worth a thousand million dollars. Of course, some of these communities have parks of their own, and they have acquired land for securing a pure water-supply, but it became plain to thoughtful people that without coöperation of the different towns and cities the time was at hand when all the water-front along the rivers or the sea, and all the broad areas of woodland or meadow which would be desirable for public use, would be built over or appropriated for business purposes. The wise plan was, therefore, devised of establishing a metropolitan park commission. In addition to the parks of Boston, Quincy, Cambridge, Lynn and others already existing, this board has selected a dozen other sites for some peculiar fitness of their own or because they are necessary to supplement the others and connect them into a system; and the map now shows that there is no part of the district which is not provided with open spaces and parkways according to its needs. We have had occasion, hitherto, to speak of the singular wisdom displayed in choosing certain of these reservations for special purposes. Twenty minutes from the heart of the city there is a curving beach of sand three miles long and fronting the open sea. This splendid beach is now free to the people, while on the high ground behind it is a driveway from which there is to be a clear view eastward, since every obstruction between it and the shore is to be removed. The Charles River is to be turned into a water parkway. The Blue Hills reservation, five miles long, takes in the highest land and the most impressive scenery in the entire district. The Lynn Woods contain two thousand acres of picturesque forest land. The Middlesex Fells, the Hemlock Gorge, the Waverly Oaks, Stoney Brook, are all particularly valuable in themselves and for their position to furnish outing grounds to the growing population of Greater Boston.

These reservations were not selected by chance, nor were they taken here and there because some one had land to dispose of, or because some association of property-owners clamored to have their district recognized. A comprehensive and well-balanced system was carried out because professional advice was taken at the outset—that is, just when it was most needed. In an early volume of this journal the fact was recalled that when Messrs. Olmsted & Vaux planned Prospect Park, they suggested that the ocean beach ought to be made the terminus of a great parkway which should take Prospect Park in its course, and then, sweeping through the rich country behind what was the city of Brooklyn and linking together a chain of small parks, be thrown across the East River from Ravenswood and carried into Central Park and onward to the north through a system of sylvan roads, or across the Hudson from the head of Riverside Drive over a bridge which is sure to come, to be connected with the heights of Bergen, the Palisades and the Orange Mountains. This magnificent scheme could have been carried out for a reasonable sum and made complete by the year 1900, and even then, with all the park-land subsequently acquired, our park area, in comparison with our population, would be less than that of London now is.

Our cities are increasing in population more rapidly than the country, and there is more need of public parks every year. But we are beginning to realize that these open spaces are quite as necessary to the life of a civilized city as its school system, or a good water-supply, or art galleries or libraries. There is likely, therefore, to be less trouble in securing the land now, even though it is much more costly than it was twenty years ago. The danger is that the grounds will be selected by men who have given no thought to the interests involved, and who do not realize how complicated a matter it is to provide for the varied wants of a great population. It is not enough to appoint a commission of worthy citizens who begin their work with a cloudy notion that about so many acres are needed for recreation-grounds, and who then set themselves to adjusting the claims of rival east-side and west-side associations or up-town or down-town interests. An individual park ought to be an organized work of art. A system of parks requires still more study if it is wisely adapted to the varied wants of all classes and all ages, with facilities for every form of outdoor recreation.

Just here the example set by Boston should be a model for every city. Professional advisers were appointed before an acre was bought. They were consulted not only in a general way as to the selection of park sites, but, after making a complete study of the whole question, they selected the sites and worked out their boundary lines. In this city we have several so-called parks in the annexed district which are not yet parks in any sense of the word, but simply areas of land which are to be at some time converted into parks. No study has been made of those lands, and when they were purchased the shape of the territory was a matter of slight consideration. No doubt, a careful examination of any one of them would show that some half-dozen acres adjacent to, but outside of, its present limits would be worth ten times as much as many another area of the same size within the park. No cursory examination of land, even by a skilled park-maker, is adequate to solve questions like this. What any park boundary ought to exclude and include can only be determined after long and serious study. The fundamental mistake here was made in purchasing this land before expert counsel was taken. There is no need of haste in constructing our new parks, but certainly if they are to serve their highest purpose some attempt at designing should be made before the surrounding property multiplies in value. It ought not to be forgotten that after the land for Central Park was purchased, the approaches at the Fifth and Eighth Avenues, which were essential to give some dignity to its entrances, had to be secured at enormous expense, and very costly, too, were the blocks added at the northern end of the park, which were found necessary to the

completion of the design. Certain it is that the topographical survey of these parks ought to be delayed no longer, for contour maps will be needed before even an intelligent study of them can begin.

New York is not the only city which has committed this fundamental error, and the mistake will be repeated over and over again until it is understood that a large part of the usefulness of a public park depends upon the selection of its site, and that a park with a well-chosen site, and with boundaries intelligently defined, is half-designed. It is an unpleasant fact that there are but few skilled park-makers in the United States, but if one can be secured by a municipality which is about to provide itself with public pleasure-grounds, no counsel of such an artist can be of greater use than that which he gives before a foot of land is bought.

Is Indian Corn Growing Wild in America?

MANY years ago researches were made to establish the fact that Maize belonged exclusively to this country, and was of American origin. It was believed in 1837 that the plant in its wild state was extinct, and thus one of the strongest arguments to prove it indigenous was lost. No evidence could be found in Europe, Asia or Africa to show that the plant existed prior to the voyages of Columbus, in 1492, or Pizarro, in 1498. Both of these navigators saw it growing, and we have now reason to believe that the Indians and Incas made use of the grain many years before these visitors arrived. We have corn that has been preserved for several hundred years, and it may have been grown over a thousand years ago. In a dry state this grain appears to be indestructible, and I have in my possession some Peruvian corn that is certainly several hundred years old; it is dry and friable, is of a red color, and yields a white meal. It was buried with a so-called mummy prior to the year 1555, and how long before history does not tell. Peruvian corn was in small ears, from three to six inches long, and bore grains pointed on the top, not in rows, but somewhat imbricated. It was evidently far removed from the wild stock.

Primitive Corn, or Wild Corn, which has been found in several different regions of this continent naturally reproducing itself, has a character of growth that fits it for long preservation in a mild climate, although, if planted and cultivated a few years, all the characteristics of wildness gradually disappear. The cobs of Wild Maize are thin and hard, covered with lines of mushroom-shaped elevations, each having a wire-like pedicel growing from the top, attached to a glume enclosing a small pointed grain, or a flat grain smaller than any pop corn. These kernel-husks overlap each other toward the point of the ear, like the shingles on the roof of a house. The imbrications are largest and longest at the butt of the ear, and gradually become less pronounced as they advance in distinct rows to the point. The individual glumes are from an inch to two inches long, and are much longer than this where the grains are not fertilized, particularly if the entire ear is of this character, as is proved by a specimen in my collection. Over these imbrications is the outside husk as we have it in all cultivated Corns. Of course, the barn and the corn-crib soon make winter protection by the glumes unnecessary.

Originally there may have been but one variety of Corn, and it was attached to a mild climate; but, judging from analogy and the effects of cultivation, we are of the opinion that there were subvarieties, and in them the grains were of a different color and the glumes striped. The Incas and Indians had different varieties of Corn, and grew ears of several colors, some uniform and others mixed, but their cobs were thin and sometimes the ears quite short. Six varieties of the Wild Corn found growing in infrequented localities have been described, five of which I have seen, and several of which have been grown. All have pedicels attached to the glumes, and the glumes imbricated.

The word corn, in many languages, simply means grain. Indian corn is Indian grain distinctively, as the Indians had no other. They had beans, squashes, pumpkins, gourds and melons, but wheat, rye, oats and barley belonged to the Old World, and had to be imported. The Indians grew Corn over a wide range of country and wherever the climate was adapted to it.

Cultivation has done wonders with this grain both in its form and color, so that now we have, perhaps, a hundred varieties. The plant varies from a foot and a half to fifteen feet in height, and the ears from two inches to sixteen inches in length. We find in modern Indian growths ears that are of a uniform gamboge-yellow, white, black, blue and red, besides mixed colors. We have also several varieties of Pop Corn, Sugar Corn and Field Corn. Most of the Corn grown by Indians is in small rounded grains, except that of the Cliff-dwellers, who appear to have been, in a measure, an agricultural people. Their cobs were thin and their grain in rows, but the individual grains were larger and square ended. Indented Corn seems also to have been known among them.

Every people must have a drink, and if the process of distillation is unknown they resort to fermentation. Primitive American races made a drink out of corn, analogous to beer, by fermentation of the ear in its green state or after it had dried. This was intoxicating to a certain extent, but, fortunately, much less so than the modern distillate from the same grain. The drinking-mugs of the Cliff-dwellers bear testimony to their having had this habit. Great improvements have been made by the white race in growing this cereal, and one of the chief of these is in the diameter of the cob, which has been made to hold as high as twenty-four rows. From four to six ears have been grown on one stalk, and ears produced of very remarkable length. Sugar Corn was introduced in 1779, and now it and Pop Corn have entered into the race, and larger varieties are being produced. The commercial variety known as "Turkey Corn" is not a Maize, and does not bear its grain on an ear, but on the top, in the tassel, as the Broom Corn does. Turkey Corn is about eight feet high and bears a small, rounded grain, which is either white or pinkish; in the east it is known by the name of Dura. The Turks and Egyptians grow Indian Corn, it is true; but it was originally obtained from America. Turkey Corn and Maize have often been confounded by botanical writers. "Blé de Turquie" is a distinctive grain.

Indian Corn in its wild state has been found in Arizona, southern Texas, the valley of Mexico and Central America. Rocky Mountain Corn I have known a long period of time; it has very small ears. Corn has been found growing wild in the valley of Mexico, and one of the professors in the University of Mexico has been experimenting with it, and has the engraving of a plant which grew about five feet high. Wild Corn has also been grown at the Landreths', near Bristol, to whom it was sent from Arizona. The last I have seen was found by Dr. Williams, of Houston, Texas, when on a hunting expedition in the southern part of that state. It is a white flint of fair size, and fifteen stalks have only produced four ears, which grew on two of the stalks. The plant is a very vigorous grower, but it is not productive, and eight stalks grown in Texas did not produce a single ear.

Philadelphia, Pa. *Robert P. Harris.*

[Indian Corn with glumes to each kernel is not rare. Usually, when this is planted, something like fifty per cent. of the ears produced have kernels without husks, which fact suggests that it is a sport or strain of ordinary Field Corn. If Maize has been found naturally reproducing itself where it could not have escaped from cultivation or have been produced from dropped seed, this certainly is a most interesting fact—a fact so important, indeed, that botanists will feel inclined to scrutinize the evidence closely before adopting the view that this Wild Maize is a survival of the prehistoric form, and not a reversion of cultivated Corn toward the primitive type.—Ed.]

Reforesting Waste Lands in Holland.

THERE is a society in Holland called the Nederlandische Heide Maatschapij, with objects similar to those of the New Jersey Forestry Association, with an official bi-monthly organ. It is encouraging to those interested in similar societies in America to know that the Heide Maatschapij and the similar society in Denmark, after which it was modeled, have been successful in many respects. It is also gratifying to learn that even in Europe a great deal of what has been accomplished is due to societies similar to the state associations of the United States. The objects of the Holland society are to promote the exploitation of the dunes, heaths and other desert places, to give advice, form nurseries, and sell trees at cost price, to educate the people in the principles of forestry by distributing literature and by delivering lectures and to encourage the Government to improve the waste land which it owns. It has a membership of two thousand. Every member pays two gulden annually, but there are many honorary members and patrons who pay much larger sums for its support. This association has already accomplished a great deal. It has induced the Government to continue the work of foresting the dunes, for which twenty thousand gulden have been already appropriated for experimental purposes, and the work is under the direction of the society, and two nurseries have been formed in which many seedlings for dune planting are grown. This association has induced individuals to improve their waste lands, and contemplates buying and improving heath land for example sake. The society is under the directorship of Mr. H. J. Lovink, an able and enthusiastic forester.

The Dutch dunes are similar to those of New Jersey, and unless the soil is covered it is shifted by wind and wave. More than four thousand acres of land in the neighborhood of the town of Bergen is owned by the Government. This is very much like the dune land near Avalon, on the Jersey shore. There are residences surrounded by large trees in the lee of the Dutch dunes, but everything has been planted, even the famous forest between The Hague and Scheveningen, the Atlantic City of Holland, and it will cost the Government at least two hundred thousand gulden to plant its dune lands in forest. Many private holders in this region are not in favor of this work, some preferring to see it in its unproductive state, mainly for hunting purposes. The principal game, however, is rabbits, and their extermination has been decreed because they are very destructive. Thirty years ago experiments were begun by the famous geologist Staring for the planting of the dunes, but the work was frowned upon and discontinued; the trees which he planted still remain.

In the eastern and southern parts of Holland there are vast stretches of rolling heath lands, a continuation of the Luneberger Heide in Hannover, which stretches through Schleswig-Holstein and Denmark to near the Zuyder Zee, in Holland. The soil is sand and gravel, mainly glacial drift, in which may be seen irregular ice-worn pieces of rock from the Scandinavian Peninsula. There are reasons for believing that at one time this region was in part forested. The names of places in old Dutch often mean forest or wood, and Mr. J. H. Schober, the pioneer of heath planting in Holland, found part of the trunk of a large oak buried deep in the ground in his plantation at Schovenhorst. A few sheep can live upon the scanty herbage, and as soon as a little humus forms on the surface it is removed by the peasants to mix with manure. The beating force of winds and rains has compacted and leached the surface soil. Low Heather and crisp Lichens cover the ground, reminding one of the sterile fields in southern New Jersey. It is even more barren than the fire-swept plains of Ocean County, in that state. With work, this whole heath can be reclaimed. The huge experiment which Mr. Schober has had the patience and patriotism to begin proves that trees will grow there. A careful working and a little enrichment of the soil are all that are needed at first. When Mr. Schober began his plantation at Putten forty years ago it was all a desert heath. Conifers from all parts of the world are growing there luxuriantly, and, although his experiments will not be complete for years to come, they show, at least, that a great variety of conifers will grow on the heath-lands of Holland, and that certain species are, of course, much better adapted to the soil and climate than others. Many tests must be made before conclusions as to the very best varieties are warranted. Mr. Schober has planted also large quantities of Scotch Pine, from which he receives a revenue. This wood is cut and carefully sorted, and the poles are shipped to the Belgian mines. What surprised me most on this remarkable plantation was to see species from the Rocky Mountains and the Atlas Mountains thriving in these heath-lands. The most beautiful trees in this large pinetum, as I saw them, were Abies nobilis and Cedrus Atlantica.—[An interesting account of this remarkable experiment, written for this journal by Mr. Dana, will be found in vol. viii., p. 442.—Ed.]

A great deal of private planting has been done in Holland with very little encouragement from the Government. In the southern part there are large areas in Scotch Pine and coppice Oak. The Willow has been planted in immense quantities along the Lek, the Rhine, the Maas and Waal. In the sandy heath regions much of the soil has been improved by planting one of the Lupines, Lupinus luteus a beautiful plant which may be useful in America as a green manure, since it seems to flourish on very sandy soil. The American Locust, Robinia pseudacacia, is a favorite tree here, since it grows well on poor soils, and it is quite the custom to plant it along railroad embankments. It is also a favorite shade-tree in many German cities, and, when properly trimmed, it has few equals for the purpose. Our Wild Cherry, Prunus serotina, also seems to thrive on the heath lands.

Amsterdam, Holland. *John Gifford.*

Foreign Correspondence.

Notes on Orchids.

Dendrophyllax Fawcettii—An importation of this Orchid is advertised for sale by Messrs. Sander & Co., and is described as resembling Angræcum Fournierianum, with snow-white flowers. It was first introduced to Kew from Jamaica in 1888, and flowered in a stove in November, when it was named by Mr. Rolfe in compliment to Mr. Fawcett, the Director of the Botanical Department at Jamaica, who found it in the Cayman Islands. It resembles Dendrophyllax funalis (Angræcum funale) in having no leaves, the long, flexuose green roots performing the double duty of absorption and assimilation. The flowers are borne on long peduncles and are two inches across, the large bilobed lip being pure white and the narrow sepals and petals greenish white; the spur is slender and about six inches long. As a botanical Orchid this is of quite exceptional interest, for, although there are several other Orchids that never produce leaves, this is the only one with flowers of any attraction.

Schomburgkia Thomsoniana is described in a sale advertisement as "undoubtedly the finest in the genus. Twenty blossoms, like a cream-colored Lælia purpurata, with a black-maroon lip, being borne on a spike." It was named and described by Reichenbach in 1887 from a plant flowered in England, its origin being unknown. In the year following it was sent to Kew by Mr. Fawcett, who found it in the Cayman Islands along with the Dendrophyllax. In general characters it resembles S. Tibicinis, but is smaller in all its parts; the flowers are about three inches across, the segments narrow, wavy and colored creamy yellow, darker toward the apex; the lip is three-lobed, the side lobes folded over the column, the midlobe oblong, very wavy and colored rich purple. This plant shares with its ally the reputation of being difficult to flower under cultivation. Now that it has been introduced in quantity, we may discover how to treat it, so as to get it to flower freely

Cattleya elongata.—This is the correct name for the plant introduced and distributed in 1892 under the name of Cattleya Alexandræ. It is now in flower at Kew, and I have seen other cultivated examples of it in bloom, but so far none with more than four flowers on a spike, although I have seen wild specimens showing ten flowers on a scape. It belongs to the same group as C. guttata; indeed, many look upon it as a variety of that species, differing only in the color of its flowers, which are yellowish brown, with a rose-purple lip. Several named varieties are recorded—namely, elegans, with larger, brighter-colored flowers than the type, and tuberosa, with darker-colored flowers. As a garden Orchid it is inferior to such forms of C. guttata as Leopoldii, amethystoglossa, etc. It requires the heat of a stove when making fresh growth.

Cypripedium Charlesworthii.—This is a first-class garden Orchid, deserving to rank among the best half-dozen Cypripediums known. It grows freely, is easily kept in health, blooms with moderate freedom, and its flowers are distinct, elegant in form and beautiful in color. There is sufficient variety in the color of the flowers to keep up the interest of collectors and give zest to the cultivation of newly imported plants. Traders know the importance of this quality, even in Orchids of the commonest character. It accounts for the ready sale of newly imported plants of Dendrobium nobile, Cypripedium insigne, Odontoglossum crispum and similar "barn-door" kinds, and if the vender can add that the plants are from an entirely new district so much the better for him. Probably no Orchid shows such range of variation in the size, form and marking of its flowers as Odontoglossum crispum, next to it, perhaps, coming Cattleya Trianæ. On the other hand, many Orchids vary comparatively little.

Vanda cœrulea.—Large importations of this beautiful Vanda were distributed in England a year or so ago, and consequently its glorious flowers are now a prominent feature in collections, and even in the flower shops in the West End of London. I have seen some exceptionally fine varieties lately; we have one at Kew, the spike of which now carries seventeen flowers, each over four inches across, the segments wide and almost imbricating, and the color a beautiful pale blue, richly tessellated with a darker shade of blue. A plant of similar character was sold at the auction rooms lately for twelve guineas. Good varieties make the inferior ones look very poor in comparison, and yet I have never seen one that was not really handsome. For the cultivation of V. cœrulea less heat is needed than for most Vandas. We grow it in a moist corner of the Cattleya-house close to a door, where it gets plenty of ventilation. Some successful cultivators recommend the conditions of an ordinary vinery for it. As a rule, the plants grow well and flower annually for about five years after they have been imported; after that they get weak and flower poorly.

Dendrobium Phalænopsis.—The number of plants of this Denbrobe that have been imported into England during the last five years is probably in excess of that of any other Orchid in the same period. And yet more are announced for sale, Messrs. F. Sander & Co. intending to offer seven thousand newly imported plants of it next week. This firm alone have imported over one hundred thousand plants of this Dendrobium. It is generally supposed that tropical Orchids are going out of favor, but the sale this ultra-tropical plant has commanded would appear to disprove this. No Dendrobium requires a higher temperature during its growing season—May to August—a hot, steamy atmosphere and plenty of sunlight being essential to the full development of its pseudo-bulbs. It is, moreover, superior to all other species from New Guinea and neighborhood in its good behavior under artificial treatment. Growers of cut flowers for the London market have secured quantities of it, finding that its long, elegant spikes of beautiful flowers fetch a high price, coming as they do at a time when they are most useful, namely from October to March.

London. *W. Watson.*

New or Little-known Plants.

Rhamnus crenata.

THIS shrub, which is a native of Japan and central and northern China, I found in Japan in the autumn of 1892, growing near the Nagascendo, the great mountain road of central Hondo, near the village of Agamatsu, and on the Pine-barrens near Gifu, where it is very abundant on sterile soil with stunted plants of Ilex crenata and Juniperus rigida in the shade of Pinus Thunbergii. It is an unarmed, erect, glabrous shrub from six to ten feet in height, with stout branches, thin light yellow-green, oblong or oblong-obovate, wedge-shaped leaves from two to four inches in length and from one-half of an inch to an inch and a half in width; minute orange-colored umbellate flowers, and abundant black fruit half an inch in diameter. Plants in the Arnold Arboretum, raised from seeds which I gathered in Japan, have proved perfectly hardy in exposed situations and on cold wet peat soil; they are now nearly five feet high, and flowered abundantly last spring, the flowering specimen which is produced in our illustration, on page 425 of this issue, being taken from one of these cultivated plants. The fruiting branch is from a specimen gathered near Gifu.

Rhamnus crenata* has proved a useful shrub in the Arboretum, and if it fruits as freely here as in Japan it will be decorative in the autumn. As a flowering plant it is not showy. The foliage, however, is lustrous and of a pleasing color, and has not been attacked by insects or disease.

C. S. S.

Cultural Department.

The Flower Border in Autumn.

THE white-flowered Anemone Japonica is an old and well-known plant which deserves a place in every collection of hardy herbaceous perennials. It delights in a rich, moist soil, where it produces its large, pure white flowers in great abundance from early in September until cut down by frost. This, with other varieties of the type, is well adapted for planting near the coast, and the long, graceful stems and good-keeping qualities render the flowers very useful for cutting. North of this city it ought to be grown in pots, since the frost too often catches it when out-of-doors. It then makes an admirable plant for greenhouse or piazza decoration in autumn.

Boltonia asteroides is one of the indispensable plants for early autumn when large and impressive specimens are desired. Its loose, graceful branches form a dense bush in well-established plants, which are literally smothered with Aster-like flowers, pure white with yellow disk. This is a noble plant for a background, as it grows four feet high when staked or tied up, but this support should not be obtrusive. Lower plants may be set in front of it; in any case, the branches should be allowed to spread naturally and gracefully. The flowers are useful for cutting, and the plant will thrive in any garden soil, but delights in moist places along streams, and is well adapted for planting near the coast. B. latisquama is another native of our western states which grows somewhat stronger and has purple-pink flowers a little larger than the preceding; its habit of growth is the same.

Funkia subcordata, the white Plantain Lily, another favorite of old gardens, is the best of all the Day Lilies, with bold foliage and large, pure white flowers which everybody associates with late summer in the garden. Very attractive are the spikes of glittering flowers above the shining green foliage, and yet it is not as common as it once was. Why does the young generation of gardeners neglect it?

Caryopteris Mastacanthus, so much talked about lately, proves perfectly hardy here, and a plant of three years' standing is a marvel of beauty at this season with its profusion of soft sky-blue flowers. The plants are very vigorous, and young ones set out in spring form dense bushes in one season and produce flowers from midsummer until cut off by frost. It is strange how slowly a good plant makes its way into general cultivation. Garden and Forest, as I remember, described

* Rhamnus crenata, Siebold & Zuccarini, *Abbild. Akad. Münch.*, iv., 146 (1843).—Maximowicz, *Mém. Acad. Sci. St. Pétersburg*, x., 18.—Franchet & Savatier, *Enum. Pl. Jap.*, i., 182.—Franchet, *Nouv. Arch. Mus.*, sér. 2, v. 73 (*Pl. David*, i.)—Forbes & Hemsley, *Jour. Linn. Soc.*, xxiii., 128.
Frangula crenata, Miquel, *Ann. Mus. Lugd. Bat.*, iii. 32 (*Prol. Fl. Jap.*) (1867.)
Rhamnus oreigenes, Hance, *Jour. Bot.*, vii., 110 (1869); viii., 312.

this one as long ago as in 1888 and kept recommending it for years before any inquiry was made for it.

Nothing is more striking in autumn than a few plants of Gaillardia grandiflora distributed through the herbaceous border or set in masses by themselves. The rich coloring of crimson and gold is to be seen in no other hardy plant at this season. The flowers are quite large, measuring from three and a half to four inches in diameter and continue to open until frost, and their long stems make them excellent for cutting. Gaillardias will grow and flower profusely in any good garden soil.

The perennial double Sunflower, a form of Helianthus multiflorus, is still unexcelled among plants which flower in midsummer and early autumn. It will grow anywhere, making a dense bush four feet high, and its rich golden flowers are borne by the hundred. H. orgyalis is a distinct and stately Sunflower,

Fig. 56.—Rhamnus crenata.—See page 424.

eight or ten feet high, with long lanceolate leaves and rich golden flowers of medium size, which open in great abundance along two-thirds of the length of the tall stem. It is one of the best of the single Sunflowers for cutting, and it is indispensable where tall-flowering plants are needed.

A neat and distinct little border plant is Lady Larpent's Plumbago, which forms a prostrate tuft eight inches high, covered with rich dark blue flowers in close terminal heads, and lasting until cut off by severe frosts. It spreads by wandering roots, and in time a few plants will carpet a considerable space, and the leaves turn late to most brilliant colors.

The Giant Daisy, Pyrethrum uliginosum, is now found in almost every garden, and its large, white composite flowers, with yellow disks, completely cover well-established plants. These grow in any soil, but they delight especially in one that is moist and rich, where they become four or five feet high and quite as broad.

Sedum spectabile, another old-fashioned border plant, has fallen into neglect in many gardens, but early this fall I observed a mass of charming pink flowers, backed by a sombre green. It was something of a revelation to be reminded once more that this Sedum was so attractive and that it filled a place which no other hardy herb can occupy.

Riverton, N. J. *Wm. Tricker.*

Hardy Plants for Forcing.

MANY hardy shrubs and herbaceous plants make interesting subjects for decoration during winter and spring, and such as have been planted out for the summer should now be potted in readiness for their winter quarters. It is not necessary to place these plants in the greenhouse at once, and the shrubs should be kept in cold cellars or pits convenient to get at, and frequently aired, even in frosty weather. It is better to keep them frozen, for all such plants force better if they have been thus kept. They should not be subjected to sunshine until they are required for forcing. The most successful growers of Lilly-of-the-valley freeze the pips continuously for a week before they force them.

Roots of deciduous shrubs and hardy bulbs can be kept in boxes out-of-doors as well as under cover. It is necessary, however, that boards be placed under the boxes to prevent contact with the earth, or the contents would freeze into a solid mass. Those who have neglected these precautions have had reasons to regret the error. For protection, hay or pine needles are excellent. It need hardly be suggested that the ground should be marked with stakes, so that plants may easily be found when covered with snow.

Desirable plants for these uses include Spiræa astilboides and the Astilbes. Deutzia gracilis, Lilacs, Hybrid Roses, Ghent Azaleas and hardy Rhododendrons are better kept under cover. Evergreen herbaceous plants, such as Foxgloves, Canterbury Bells and Christmas Roses, must be kept in frames and aired during bright weather.

Wellesley, Mass. *T. D. Hatfield.*

The Acacias.

A FEW years ago even the most common Acacias were unknown or ignored by American florists. Such beautiful species as A. armata, A. Drummondii, A. longifolia and A. Riceana are now becoming quite common and popular, and many well-grown plants, especially of the two first-named species, may be seen at their flowering season in the windows of most progressive florists. That the Acacias can be grown as well here as in Europe is quite evident, and there are, perhaps, no spring-flowering plants deserving of a more general cultivation for indoor decorative purposes, whether in the florist's shop or in the home.

Aside from their value as ornamental plants in the north, the Acacias are undoubtedly destined to play an important part in southern landscape-gardening, although the tendency in the south at the present time is to introduce plants familiar in the north which are unsuited to the climate of most southern states. Most Acacias are evergreens, but they by no means require excessive heat; many species will, on the contrary, stand several degrees of frost without injury, and some of the deciduous species, such as A. Farnesiana and the nearly related A. Julibrissin, are perfectly hardy in this latitude. Nothing can be more graceful and attractive than large specimens of the Silver Wattle, A. dealbata, with its masses of yellow globular heads of flowers and finely pinnate silvery and downy leaves. Large specimens of A. Drummondii, so frequently met in conservatories, give an idea of the beautiful scenery which it would be possible to create in southern latitudes by the judicious planting of the best species of Acacias in connection with other subtropical plants.

All Acacias do well in a sandy, fibrous loam mixed with peat or leaf-soil. As a rule, they require abundant water during the growing season, but will afterward thrive if kept moderately moist and cool. For propagation both seeds and cuttings are used with advantage. The cuttings made with a heel of half-ripe wood should be inserted in a bed of clean silver sand, without bottom-heat, in a cool greenhouse. They root freely, and should be firmly potted immediately after rooting. During the summer-time both old and young plants do best in the open air in a cool frame without glass, where they can be partially shaded and thoroughly watered as required. In the south, small twigs simply broken off and placed in the soil will root as readily as Willows in the north. Here they thrive in sandy and sterile soil, provided it retains the necessary moisture in summer.

Among the best species, both for indoor culture in the north and for more extensive planting in the south, are Acacia armata; leaves replaced by oblique, rounded phyllodia close to the somewhat winged and spiny branches; flowers yellow, in axillary globular heads. A. dealbata; leaves twice pinnate, soft, downy and silvery on the under side; flower-heads yellow, in ample racemes in summer. This species grows to a considerable size. A. Drummondii; leaves small, twice pinnate, leaflets linear; flowers in cylindrical spikes, yellow, in spring. A. lineata; leaves small, linear; flowers in axillary globular heads, bright yellow. A. longifolia; leaves rather long, flattened, tri-nerved phyllodia; flowers in cylindrical axillary spikes, yellow. A. Riciana; leaves linear; flowers yellow, in small globular heads, forming ample drooping masses at the end of short side-branches; a very beautiful and graceful species.

Newark, N. J. *N. J. Rose.*

Notes from the Santa Monica Forestry Station.

Stauntonia hexaphylla.—This beautiful Japanese climber is succeeding well with us at Santa Monica. Our specimen was planted in the spring of 1894, being then only a few inches high. Trained on wires it now covers a space about ten feet by twelve feet, and is growing rapidly, though almost directly exposed to the strong sea breeze which prevails here all summer. Its digitate foliage is very handsome, with oval, acuminate, somewhat irregularly undulate leaflets, ranging from one to five inches in length, the mature ones deep green, while those of the new shoots are of a beautiful bright shade. The delicate, creamy, pendent flowers, about half an inch in length, are borne in few-flowered axillary racemes in April. If the specimen here is typical, the name hexaphylla is rather a misnomer, for the leaves are mostly three, five and seven foliate, five and seven predominating on the mature wood. Diligent search is necessary to discover a six-foliate leaf.

Eucalyptus ficifolia.—Our bright scarlet-flowered specimen of this very fine tree is now in full bloom, and shows to wonderful advantage against a background of Eucalyptus polyanthema (the gray form). The heavy mass of soft glaucous gray of the latter sets off charmingly the stiff, dark green leaves and the great clusters of bright red blossoms which cover the entire crown of the E. ficifolia. The variety here is a full month later in blooming than the type, which is already quite past its bloom. E. ficifolia is regarded by many as the most beautiful of the numerous Eucalypti represented here. Its regular, symmetrical habit, rather pyramidal form, cinnamon-colored bark, large, ovate-lanceolate, pointed, dark green, coriaceous leaves, brilliant red flowers and remarkable, heavy clusters of large, ovoid seed-capsules combine to justify amply the eagerness with which it is sought after for ornamental purposes. It is not a tree of large growth, and it is reported as not exceeding fifty feet in height in its native forests. At Santa Monica it has done well in a mean winter temperature of about fifty degrees, Fahrenheit, with the thermometer occasionally registering as low as thirty-four degrees on the sheltered terrace in the cañon where the trees stand. Of our five specimens the best is a double-stemmed tree twenty-three feet high, with a spread of sixteen feet. The others are somewhat smaller. This represents a growth of seven years from the seed, without irrigation, and with an average annual rainfall not exceeding fifteen or sixteen inches; last winter it was less than eight inches. As an avenue tree and for ornamental purposes generally, in suitable climates, and as a highly desirable greenhouse species in colder regions, E. ficifolia has many claims to consideration.

Eucalyptus calophylla.—This tree, closely related to the one just described, is also blooming freely now. This species has been described recently in Garden and Forest by Mr. Wat-

son (see p. 364), from a specimen grown under glass at Kew. His description tallies well with the appearance of the trees grown in the open air at Santa Monica. It may be added, however, that the seed-capsules are larger and even more remarkable than those of Eucalyptus ficifolia, though more sparsely borne. They are some two inches or more in length, an inch in diameter, rudely goblet-shaped and slightly constricted at about two-thirds of their length from the peduncular end. The outer integument on the dry capsule is gray-green, hard and rough. Underneath this is hard, brown, fibrous tissue, which takes a polish almost like brier wood. These pods make excellent pipe-bowls, and can be utilized also for umbrella-handles and the like. The species endures several degrees of frost and grows more rapidly than E. ficifolia, with which it may be ranked for ornamental purposes. As to more general utility, reports from Australia ascribe considerable value to the timber, which is said to be hard, close-grained and finely veined.

Santa Monica, Calif. *John H. Barber.*

Notes on Watsonias.

MY experience with Watsonias has been confined to a few of the species. I have not tried the new variety offered this year by Messrs. Wallace & Co., and spoken of so highly by Mr. Watson in the issue of GARDEN AND FOREST for October 7th, but if I find it no better than most of such as I have grown I shall not value it highly. Watsonia Meriana and its varieties are too much like Gladioli of a poor strain to be worth growing more than once, and W. humilis is not much better, though the aspect of the bulbs with their coarse-fibred coats is of some interest, as is the firm, rigid foliage, which in some species is spirally twisted. These bulbs are not very free-flowering unless they are kept much warmer during their season of rest than is necessary with Gladioli. There is, however, one species of the Gladiolus-leaved series which is worthy of a high place among flowering bulbs, namely, W. angusta. It makes a spike of exceedingly brilliant scarlet flowers about two inches or a trifle less in diameter. The tint varies a little in different individuals, but all are beautiful. I lost the few I had some years ago and have not been able as yet to get a fresh supply, some form of W. Meriana being furnished instead of the true species. Of the smaller-flowered section I have grown only one species, W. aletroides, a kind of lower and slenderer growth, bearing a spike of rose-colored flowers, a little tinged with purple at the tips. These flowers are nearly cylindrical and drooping and remind one somewhat of Lachenalias. I was surprised to find this species hardy. It came up and flowered yearly until, through my own neglect, it was smothered and killed by Witch Grass. One more species only I have grown, W. fistulosa, ranked by Mr. Baker as a Micranthus. This is an interesting species, but not handsome enough to be worth keeping long. Its foliage consists of erect, round hollow leaves, and the flowers are very small and crowded in the spike. The specimen which I had was blue-flowered, not red, as Mr. Baker describes it.

Canton, Mass. *W. E. Endicott.*

California Irises.—Failure to establish Iris Hartwegii, I. Macrosiphon and, perhaps, other California Irises, has been so general that it will interest gardeners to know that Herr Max Leichtlin has lately taken them in hand and solved the problem of their successful cultivation, so that now "they grow like weeds" in his garden. He says that "plants are received in Europe from their native quarters quite fresh and healthy-looking, but I have treated such plants several times and they always died. My experience is that they cannot be successfully moved unless they are in full vegetation. We must grow them from seed and not touch the seedlings before they have formed a solid root-stock; after this, and when movement to again grow has begun, they can be safely handled and transplanted like other Irises; in May in Baden-Baden. They want sunny quarters. This spring I had plants with twelve or twenty flowers open at one time in all shades of ochre and cream. They are very striking plants."

Elizabeth, N. J. *J. N. Gerard.*

The Japanese Wineberry.—This plant, Rubus Phœnicolasius, which has lately been the subject of much notice, is a most useful addition to our fruits, even in its present form, and it is reasonable to hope that it will improve considerably under cultivation. It prolongs the berry season, and producing comparatively small seeds, it is superior to blackberries and raspberries for canning, preserving, wine and jelly. It is also hardy, ornamental and prolific, and is subject to attack from few diseases or insects. During the past season it came into full bearing after the main crop of raspberries had been marketed, and in New York city, where the fruit was previously unknown, it readily brought ten cents a quart to the growers.

Floral Park, N. Y. *M. Barker.*

Correspondence.

Along our Roadsides.

To the Editor of GARDEN AND FOREST:

Sir,—It is quite a general custom among many of our property owners to attempt to beautify our roadsides by going over them with scythe and axe, shearing everything close to the bank, or, perhaps, leaving a straight row of trees a certain distance apart, whose matured size will encroach on the road or, perhaps, interfere with the telegraph-wires, and eventually subject them to the pruning butcher. This shearing treatment of roadsides, with the firing that is often practiced, must exterminate many of our native plants, or, at least, banish them from places where they are most desirable. After three years of judicial pruning and trimming of the roadsides here around the Pitcairn estate we are highly gratified with the growth and variety of plants which are now covering them. On one side of the road Sassafras, Cornus florida, Viburnum acerifolium and V. dentatum are spreading, the latter especially desirable, being a compact shrub, with erect branches about eight or ten feet high, with large cymes of white flowers which are followed in the autumn with bright blue fruit. The Sheep-berry, V. prunifolium, is also very plentiful and desirable. Prunus serotina, P. Virginiana and Celtis occidentalis have attained a height of four and five feet from mere shoots a few inches high two summers ago. The showy Rhus glabra is establishing itself very freely. Rubus Canadensis and R. villosus have made a wonderful growth, and I find many waste places along the roadside where they are invaluable.

Among the Roses, Rosa lucida is the most plentiful, and masses of it can be found fifty feet in length. Plants of the Sweetbrier are abundant, as is also R. Carolina. Sambucus Canadensis, although common, is one of the best of shrubs. But of all the plants for bank covering none can compete with Lonicera Japonica. Although it is not a native plant, it has become established here, and even threatens to strangle many of our native shrubs. In this section of Pennsylvania it is so thoroughly naturalized that one would suppose it was a native. It extends over large areas, and as I write, in August, there are considerable masses of white and cream-colored flowers. In one place it is seen clambering over a lot of old Cedars, and in another it has festooned itself from one Catalpa-tree to another on the summit of a high bank, and as one drives along the highway, about forty feet below, they are very picturesque. I have propagated and collected it very freely and introduced it all along our roadsides. The only attention it gets is a cutting with the scythe or sickle once or twice a year.

Virginia Creeper is making an excellent ground cover, and Vitis Labrusca has within three years covered a space of ground fifteen feet square. Of herbaceous plants, Linaria vulgaris, Asclepias quadrifolia, Hypericum perfoliatum, Rudbeckia hirta, Baptisia tinctoria, Eupatoriums, Asters, Solidagos, Strawberries and Potentillas, all of which are most pleasing in their struggling efforts to cover and beautify the ground.

Huntingdon Valley, Pa. *L. F. Horner.*

Notes from Botanical Garden at Smith College.

To the Editor of GARDEN AND FOREST:

Sir,—In the collection of tropical plants which are planted out in the large Palm-house here are three species of Musa, namely, M. paradisiaca, M. Chinensis (Cavendishi) and M. textilis. All have made phenomenal growth this season. They were planted about the last week in April, when M. paradisiaca was about four feet high, a mere sucker in a ten-inch pot. It now measures twenty feet in height, with leaves eight feet long by two and a half wide, while the stem at one foot from the ground is twenty-seven inches in circumference. M. Chinensis was also a small plant, about three feet in height; it is now ten feet tall, with leaves five feet long by two and a half wide. This species is naturally dwarf-growing. M. textilis, which was in an eight-inch pot and about two feet high when planted out, is now twelve feet in height, with leaves five feet six inches long and eighteen inches across, and has several suckers almost as large as the parent plant. This species is admirably adapted for use with other tropical plants. It does not grow to the proportions of the taller species, but the stems and leaves, which are of a grayish-green color, have a partic-

ularly handsome and graceful appearance. The bed these Musas are growing in is about five feet in depth, composed of good rich soil, and they have had plenty of water.

The hardy Nymphæas in the ponds in this garden, particularly N. Marliacea chromatilla, grew so luxuriantly this season that many of the leaves were forced several inches above the water. During the hot weather these became much shriveled and sunburnt, and by the end of July were unsightly. As an experiment, the leaves were all mown off about six inches below the surface of the water. New growth and flowers soon followed, and for the past six weeks the plants have borne more flowers, and with their fresh green leaves have been even more attractive than they were in spring. Whether this will have any ill effect on the vitality of the plants remains to be seen; but it is preferable, in my opinion, to have the two crops of flowers, even at the expense of the plants.

Botanic Garden, Northampton, Mass. *Edward J. Canning.*

Asparagus Rust.

To the Editor of Garden and Forest:

Sir,—In the last issue of Garden and Forest attention is called in the Notes to Professor Halsted's recent article on the Asparagus rust, Puccinia Asparagi, from which it is inferred that the malady is probably confined to a few localities. I wish to state in this connection that the Asparagus-plants at the Agricultural College here are completely covered with the same rust this fall, although I cannot say how far it has been disseminated in other parts of the state, neither have I noticed it on the College plants previous to this year.

Massachusetts Agric'l College, Amherst, Mass. *G. E. Stone.*

The Forest.

The Burma Teak Forests.—XII.

PORTIONS OF THE FORESTS MAY EVENTUALLY BE GIVEN UP FOR THE EXTENSION OF CULTIVATION.

IT is not unreasonable to suppose that the time will come when the timber requirements of the country, and the demands of the world's markets, can be provided from a much smaller area than that at present reserved. Many of the Karens are taking to a more settled, a more civilized system of cultivation; they make permanent paddy-fields in the place of their shifting toungyas, but this must necessarily be a slow process, and meanwhile the increasing yield of the forests will make it possible to find room for them even beyond the areas assigned to them under the present settlement. The real strength of the gigantic British Indian Empire consists in the prosperity and contentment of its inhabitants. The British nation may well be proud of having accomplished this—of having established a strong, just and considerate Government among the numerous nationalities of British India. It may not be generally known that those provinces of India which are under British government have nearly one-third the area of the United States, without Alaska, while the population is much larger—namely, 225,000,000. Including the native states, the British Indian Empire at present has an area of one and a half million square miles, with a population of 300,000,000.

CONCLUDING REMARKS.

It has been stated that strong opposition was raised in the earlier days against the demarcation of reserved forests in Burma. Even some of the principal forest officers, after I had left Burma, supported this opposition, and their strongest argument was that the natural forests should be left to the Karens, and that for the supply of Teak timber in the future we should exclusively rely upon plantations made, if possible, in the open country outside the forests. All mature timber in the forests could then be cut at once, and this would give a powerful stimulus to the trade and prosperity of the country.

Fortunately, these views did not at that time prevail. Slowly, but steadily, the forest revenue had increased. The merchants of Rangoon were as anxious as they had been in 1860 to get the forests into their own hands, or, at least, to girdle as much timber as they wished. But the steadily growing surplus revenue was accepted by the Government as proof that the system initiated in 1856 was a good one and ought to be maintained. And when in 1886 upper Burma was annexed the good financial results of forest management in lower Burma led to the adoption of a similar system for the new territory. The forests of upper Burma are exceedingly rich; large quantities of old timber, girdled by the holders of forest leases under the King, are being brought out, and it has been possible largely to continue girdling operations. The surplus forest revenue of upper Burma is very large, amounting during the five years ending 1893-4 to 1,436,000 rupees a year.

The far-sighted forest policy laid down by Lord Dalhousie, and carried out by Sir Arthur Phayre, made it possible to initiate a good system; its maintenance, however, is chiefly due to the growing surplus forest revenue. Nay, it is not too much to say that the Burma surplus forest revenue has largely contributed to the establishment and maintenance of a good forest policy in the British Indian Empire. The figures for the five years ending with 1893-4 stand as follows:

Mean annual	British India. Rupees.	Burma. Rupees.
Gross revenue,	15,949,000	4,978,000
Expenditure,	8,603,000	1,672,000
Surplus revenue,	7,346,000	3,306,000

The mean annual surplus forest revenue of Burma amounts to forty-five per cent. of that produced by the forests of the whole British Indian Empire.

The reader may ask whether too much stress has not here been laid upon the production of surplus revenue from the forests. The value to the nation of well-managed public forests consists less in the annual surplus revenue which they give than in the accumulated capital value which they represent, the supply of timber and other produce which they yield and in the protection which they afford to agricultural and other interests. The real advantages of good forest management, however, are not yet recognized everywhere. In England, at least, and probably also in the United States, most people will be disposed to judge the management of forests by the surplus revenue they yield.

Though the present paper has extended to great length, I have no right to expect that the reader has fully understood the leading facts connected with forest management in Burma. A few practical points, however, have, I trust, been prominent. These I should like to recapitulate and particularly to submit them to those who may in the United States have to undertake the management of forests similarly constituted.

First. Collect data as soon as possible regarding the marketable species, growing stock, rate of growth and their requirements.

Second. Cut sparingly, regulating your cuttings, according to circumstances, by area or by volume.

Third. Select the trees to be cut with due regard to the maintenance of the most valuable species.

Fourth. Increase the proportion of the more valuable kinds by planting or by other means.

Fifth. Resist, if possible, the temptation to make a big boom at the outset, and form your plans so as to secure a sustained and, if possible, a steadily increasing yield from the forests.

Sixth. If the question has to be decided which areas should be selected to be demarcated as reserved or state forests it is best at the outset to make these areas as large as possible. Hereafter, when the yield of these areas is known, it will be easy to give up such portions as may be less valuable for the extension of cultivation and in order to provide local labor in the forests.

Bonn, Germany. *Dietrich Brandis.*

[This installment concludes the instructive chapter in the history of skilled forest management which Sir Dietrich Brandis has been kind enough to provide for our readers. It is, perhaps, the most important experiment of the kind which has been inaugurated during the century, and, considering the difficulties encountered, the most successful in a large way, so that a sketch of it by the originator of the scheme has a value which every student of forestry will appreciate. In response to requests of correspondents, we shall publish a small edition of these articles in pamphlet form.—Ed.]

Recent Publications.

Camping in the Canadian Rockies. By Walter Dwight Wilcox. With twenty-five full-page photogravures and many text illustrations from photographs by the author. G. P. Putnam's Sons. 1896.

This book is not a record of pioneer life, nor the work of a geological or mining explorer, or of a railway engineer, or of a hunter or naturalist, but simply of a man who enjoys camp life, who climbs mountains because he loves to do it, and who takes photographs with much more skill than the ordinary amateur. Mr. Wilcox, indeed, manifests

some interest in the geography of the region, but this seems quite incidental, and he evidently has no idea that his readers care for information of this character or he certainly would have furnished them with a map of some kind, even if it were nothing more than a rough sketch. His excuse that there are no detailed maps to cover the region is not quite satisfactory, and the lack of such a help must be looked upon as a blemish to the book. Nevertheless, all who have enjoyed the experience of camp-life in the mountains, and the much larger body of persons who have never had that pleasure, but who entertain an inward longing to try it, will be grateful to have their attention directed to this book. In the first place, it is attractive to look at, printed on excellent paper and with large, bold-faced type, and the illustrations have a genuine artistic quality. That is, Mr. Wilcox has the faculty of selecting a point of view from which his camera looks out upon a well-composed picture, with all that is distracting excluded. Many of the photogravures are conspicuously good and reproduce in a striking way the pictorial effects of these great mountain masses, glaciers, lakes and streams.

It is the glaciers which give the crowning interest to these Canadian Rocky Mountains, for they do not reach the height attained by the range within the United States. But these great stretches of ice, with their lofty surroundings, are many of them uniquely beautiful and make a most impressive appeal to the imagination. And then when we consider that 120 of them may be counted from the summit of Mount Abbott, and even more are in view from Eagle Peak, it can readily be seen that a summer can be passed in a comparatively small district with a glacier to be studied every day. Every reader will share Mr. Wilcox's evident enjoyment of this wonderful scenery, and, although he has not the large descriptive and poetic faculty displayed by Mr. Muir, he writes in such a straightforward, manly way that every reader feels that he would enjoy life under the same tent with him. Camp-life, when it has an established base of operations at a first-class hotel, and possesses all the modern equipments for comfort and convenience, has hardly enough of hardship and adventure in it to satisfy those who lie in a hammock and read about mountaineering, and yet there was enough of danger and privation in Mr. Wilcox's experience to demand patience, courage and resolution and to test the nobler qualities of a man. After the quiet descriptions of perilous ascents and of various trials and privations encountered, one feels that the author speaks only words of truth and soberness when he argues that life in the mountains is an education, especially in the way of strengthening character. Before these ranges are thoroughly explored and their highest summits scaled the nerve as well as the muscle of many a camper will be put on trial. Mr. Wilcox presents many facts relating to the geology, the climate and the vegetation of this region, much about the Indians, the game animals and the lower forms of life, but the primary excellence of the book is its buoyancy of tone, which exhilarates like mountain air. This is seen not only in descriptions of scenery, but in the experiences of camp-life, with its adventures and pleasures, its labors and disappointments. The author does not complain because the storms do not abate to suit him or because the mountain paths are hard. He makes the best of every risk and discomfort, although he has the good sense to realize that it is the part of wisdom to fortify himself in every possible way and not to encounter hardships for their own sake. Here is a little advice which every one who meditates enjoying a summer vacation among these glaciers will do well to heed:

> Let the camper surround himself with all the luxuries that are possible without trespassing on the bounds of reason; let him have a good cook and a good packer; horses that are used to travel; a fine camp outfit, comfortable blankets and a good tent; a full supply of cooking utensils, knives, forks and spoons; above all, let him take an abundant supply of provisions, comprising a large variety of dried fruits and the various cereals, and let each article be of the best quality.

Exhibitions.

Flowers and Fruits at the American Institute Fair.—II.

As we go to press a collection of Chrysanthemums is on exhibition at Madison Square Garden, although it is, of course, too early for many of the best kinds. Last week few flowers were seen on the tables, although there was a fine display of Cosmos, which in color, size and graceful poise we have never seen excelled. Mr. Childs, too, had some admirable spikes of Gladiolus of the Lemoine type. A few superb Roses were contributed by E. W. Bliss, gardener to A. J. Wengertner, Bay Ridge, New York, and a good collection of ornamental plants was shown by Mr. Dimmock, the American agent of F. Sander & Co. Very effective, too, was a table of Cacti, including some fifty varieties, among which was an example of Cereus giganteus, and exhibited by M. Keppler.

The greater part of the space, however, was given up to apples, and a magnificent show they made. The most complete collection was sent by the New York Experiment Station at Geneva, and it consisted of 225 varieties of apples, besides some of the best American plums, and many of the newer varieties of grapes. These were all carefully named, and formed a valuable object-lesson to those who wish to study and compare varieties. The management has concluded to let them remain to the end of the exhibition on the 29th, and it is hoped that all interested in pomology will appreciate this opportunity. Two other exhibitors, Messrs. White & Rice, and T. F. Pierson, showed as many as 175 varieties each, and there were some admirable entries for a smaller number of varieties, especially that of Mr. Charles C. Kromer, every plate of which was worthy of a first prize.

Vegetables were surprisingly good. The Riverhead Town Agricultural Society showed a collection of fifty-three different sorts, with more than 200 varieties, which, considering the lateness of the season, was remarkable. J. M. Thorburn & Co., Peter Henderson & Co., J. W. Foster, of Yonkers, and J. Van der Wend also made large entries. None of these exhibits, however, had greater attractions for visitors than the vegetables contributed by the vacant-lot farmers in this city. Taken together this display was very comprehensive. One of these farmers, Mrs. Miller, showed thirty-five varieties, every one of which was well grown. A large bunch of peanuts, still attached to the plants, and grown in a vacant lot along Fifth Avenue, created a mild sensation.

Notes.

Staple products affected by short crops include currants, raisins, figs, cloves, Grenoble walnuts, Sicily filberts and Texas Pecan nuts, all of which have recently advanced in price. Hickory nuts are also scarce, and the new crop sells for half as much again as old nuts carried over in cold storage, the latter constituting the main supplies now.

Among fruits still seen in excellent condition, but in light demand because their season is past, are large firm watermelons, offered at forty-five cents each, and choice Maryland peaches, which find few purchasers at fifty cents for a basket holding thirty selected fruits of first size. In one of our markets barberries are offered, the tart red berries being prepared for the table much as cranberries are. Pomegranates, from Spain, cost fifty cents a dozen.

Many of the primary schools in southern Russia have orchards and kitchen gardens attached for the use of the schoolmaster, as well as small model kitchen gardens, tree plantations, or farms, in which gardening and sylviculture are taught. Even vineyards are to be found in connection with some of the schools in Caucasia, and the pupils are carefully instructed in silkworm culture and beekeeping. *The Gardeners' Chronicle* well remarks that besides encouraging the pursuit of agriculture as a calling, and in this way diminishing the rush of population to the towns, these school-gardens have another immediate good effect, and that is upon the health of the children by the interchange of outdoor study with sedentary work in the schoolroom.

Courses of informal talks on botanical subjects, with illustrations by charts, blackboard demonstrations and specimens, will be given to private classes, village improvement associations and similar organizations by Miss Dock, who is known to our readers as an occasional writer for Garden and Forest. One of these is an historical course, giving the development of modern botany; another is descriptive, outlining briefly the history and distribution of a few of the well-known families of

plants, with some practical suggestions as to the preservation of wild roads and wayside shrubs; the third is arranged for students preparing to take a botanical course in our universities. Terms and additional particulars may be had on application to Miss M. L. Dock, at 1427 North Front Street, Harrisburg, Pennsylvania.

Up to the 8th of October 273,287 barrels of American apples had been received at the port of Liverpool alone, while during the same period last year only 19 554 barrels had been received, an increase of over a quarter of a million barrels. In a circular of a leading Liverpool dealer it is stated that if the fruit had all been of the first quality that market could hardly have absorbed this tremendous quantity in so short a time, and especially so early in the season. But since far the greater proportion of the fruit was defective in condition and had to be forced off, as it could not be held, the results have been cruel to shippers. Sound and tight barrels of King apples, from New York and Boston, varied somewhat during the second week in October, but averaged $2.75, although the Canada apples brought a trifle more. Baldwins, Hubbardstons, Greenings and Northern Spies sold for lower prices, some of the best stock bringing only $1.25 a barrel. These were the top prices for the week, but defective and "slack" barrels often brought seventy-five cents less.

Professor Lamson-Scribner writes to *The American Agriculturist* that the United States furnishes thirty per cent. of all the Grass species of the world, besides a greater number of valuable native forage plants than any other continent. One of the best lines of work looking toward the development of improved varieties is that of bringing our native plants into cultivation. These home species are best adapted to the conditions here, and it is folly to think that better forms can be introduced from Europe or Australia, where climate and soil and the amount of rainfall are different. The meadow Grasses of our parks, woodlands and mountain slopes, the Grama and Buffalo Grasses of the southwest, the blue stems of the eastern prairie belt, ought to be studied and tested. What we need to do is to go out into the fields and meadows and select and propagate the thrifty grasses and native clovers, persistently working as the horticulturist has done to produce the best varieties of fruit, and the florist to secure the most highly developed flowers. Every cultivated grass, grain and fruit has been developed from exactly such small beginnings, and when we take into account the magnitude of our grazing industry it is evident that the line of work indicated is exceedingly important.

The monks of the Middle Ages were usually sagacious enough to select fertile and sheltered locations for establishing their cloisters, and they surrounded them with rich fields and gardens. At Interlaken, Switzerland, on the deep alluvial soil deposited by the rivers which came down from the great Bernese Oberland, a monastery and nunnery were founded in 1130. The monks planted a grove of Walnuts, Juglans regia, about their buildings and a long avenue connecting the cloisters with the neighboring village of Aarmühle. They had learned from the east and south, no doubt, the value of the rich, fruity oil yielded by the walnuts, and to this day it is pressed in quantities here and used as a substitute for olive-oil. The Walnut-trees still survive, hoary with age, picturesque and venerable. They now line the fashionable promenade, Hoheweg, where the whole world throngs to pay homage to the Jungfrau, crowned with her eternal snows. Throughout the country round about here Walnut-trees are very common, and they are probably seedlings from nuts which have been carried away by squirrels from the parent trees. To-day, within the walls of the old cloister, the present Kreis Forester of Interlaken has established a little "plant school," where all sorts of seedlings are grown, to be used in the work of protecting the flanks of the mountains against torrents from melted snow. Thus the monks builded better than they knew, and, in a certain sense, the modern forester here is their lineal successor.

The windows of an underground railway carriage in London would hardly seem to afford any remarkable facilities for botanizing, and yet, according to *The Globe*, a Londoner would have to walk many miles before he encountered such an assortment of wild plants as that which he can inspect along the railway banks, for example, between Gloucester Road and Earl's Court stations. The flowers are not all wild, for self-sown Marigolds and Sunflowers give a horticultural aspect to some of the slopes; but besides these a wealth of plants which are associated with hedgerows along country roads is to be found, which somehow or other have fought their way into the midst of this wilderness of bricks and mortar. The Bladder Campion, for instance, is flowering here profusely, with Mallows, Bindweed, Toad Flax, Coltsfoot and Centaury in large clumps and patches, and, doubtless, they are haunted by the same species of insects which make them their home in the country. As entomologists multiply and moths grow scarce it is by no means impossible that these little railway preserves may come to be the last localities where some insects will exist. Perhaps the district railway may in future make a little addition to its revenue by selling tickets for admission for botanists or entomologists to collect rare weeds or pursue evasive Lepidoptera along the railway embankments. These little centres of wild life in London, more thoroughly protected between diverging railway tracks than by lines of fences or cohorts of gamekeepers, are fruitful of scientific possibilities.

Excepting asparagus, all the vegetables of the year may now be readily procured. The last eggplants, from near-by farms, sell for ten cents each, the first from Florida realizing fifteen to twenty cents apiece. The season for field cucumbers in the north is about ended, seven cents apiece being charged for the few in stock, and hot-house cucumbers, from Boston, command eighteen to twenty cents. Lima beans still come from New Jersey, and cabbage is plentiful and cheap. The shipments of tomatoes from New Jersey and Long Island are nearly ended, fifteen cents a quart being the price now asked. Radishes, peppers and squashes come from this and neighboring states, as well as string-beans, though this vegetable is also received from Norfolk and Charleston. Virginia is sending green peas. The cauliflower now offered is notably well grown and showy and sells for fifteen to twenty-five cents a head. The first southern okra of the season, of regular size and even color, brings fifty cents a hundred. Native Brussels sprouts cost fifteen to twenty cents a quart, and the more solid sprouts, imported from France, twenty-five cents a pound. Sweet corn, tender and of good quality, may be had for thirty cents a dozen. Pumpkins cost fifteen to twenty-five cents, according to size. Long stalks of beautifully blanched celery come from Kalamazoo, and shorter stalks of equally good quality from Rochester, in this state, and from New Jersey. Salsify costs ten cents a bunch. Other root vegetables in season are carrots, beets, parsnips, celeriac, radishes, turnips and onions. Sweet potatoes from Virginia and New Jersey cost twenty-five cents a half-peck. Field mushrooms this week bring sixty cents a pound, the cultivated costing one dollar. Mint, chervil, chives and tarragon are among the greens in season, and for salads there are Romaine, and lettuce from Boston, blanched endive and escarole, and corn salad.

The New York Flower and Fruit Mission, founded twenty-seven years ago, ended its work for this season last Thursday. Since May, members of the society have, on Monday and Thursday of each week, personally distributed the flowers to patients in the public hospitals, and many sick persons in tenements have been reached through missionaries and Bible readers. On the closing day contributions came from points in Connecticut, northern New Jersey, Long Island and other sections in this state. These flowers have a special charm in their suggestion of country gardens, meadows and woodlands. The choicest are always sent to patients most seriously ill, while the little bunches which go to the sick blind are made up of the most fragrant blossoms and leaves, lemon verbena being a special favorite. Among the brightest flowers on Thursday were marigolds, dahlias, scarlet sage, geranium, nasturtiums, cockscomb, zinnias, bachelors' buttons, scabiosa, cannas, phlox and late single sunflowers. Cosmos, ageratum, heliotrope, mignonette, sweet alyssum and balm were other garden flowers, with a few roses, sweet peas and early chrysanthemums. Flaming autumn leaves, purple asters, golden-rod, daisies and pink clover had been gathered in wider fields. Slips of plants and vines came in small boxes, with directions for planting in earth or rooting in water, and there were some potted plants, vegetables and fruits. During the season new-laid eggs, jelly and other delicacies suitable for the sick are occasionally received, and these are especially useful. Probably none of our charities are conducted with so little expenditure of money. The flowers and other material are free gifts, and these in packages not exceeding twenty pounds are carried without charge by the express companies. The arranging and distributing is done by some of the members, at no little personal sacrifice during the summer months, when as many as five thousand bouquets have been made in a day; the use of the room is also free.